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## INVESTING IN ECONOMIC INFRASTRUCTURE

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This summarizes the proceedings and recommendations of a conference of the same name, co-sponsored by the Massachusetts Executive Office of Economic Affairs and the University of Massachusetts, Maurice A. Donahue Institute. The conference was held on July 21, 1992 at the University of Massachusetts at Worcester.



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## I. INTRODUCTION

Of the many issues that were discussed and debated at the July 21st meeting on Investing Economic Infrastructure, the one point upon which there appeared to be widespread agreement was that continued investment in infrastructure was essential to the continuing economic development of the Commonwealth. This position is supported by the Executive Office of Transportation and Construction's Report from the Secretariat, "Economic Impacts of Transportation Investment: The Road to Recovery in Massachusetts" and by the recent Federal Reserve Bank of Boston study distributed under the title, "Financing Capital Expenditures in Massachusetts." But consensus was not nearly so universal regarding the specific applications of this general principle. A variety of views was expressed on such essentials as: what the state's interest in economic development should be and how this interest should best be expressed; how local, regional and state interests and concerns might be balanced and articulated; how private investment relates to public actions; and, even, on just what is meant by "infrastructure." These and other themes arising from the meeting are summarized in the following sections.



## II. THE NATURE OF INFRASTRUCTURE INVESTMENT

The term "infrastructure" is used here to mean those physical structures and systems that facilitate the use of land and the movement of people, goods, and information from one place to another. Included under this rubric are Highways, airports, rail and other transportation facilities, water supply and sewage treatment systems and telecommunications networks. Not included are, so-called, "soft" infrastructure systems such as education, public service and finance.

The economic impact of infrastructural investments is three-fold. In the first instance, investments in infrastructure create jobs as a direct consequence of the planning, design and construction activities necessary to bring physical facilities into being. These first-order economic impacts are subsequently reflected throughout the economy in demands for goods and services necessary to support these primary investment activities. In both their direct and indirect economic impacts, infrastructural spending adds to the Commonwealth's economic product much as any other spending would do. But it is through their function as facilitators of other economic (and social) activities that infrastructural investments play a uniquely powerful role in fostering economic development.

Infrastructure creates time and place utility. Without water and sewerage systems the efficient use of land would be impossible; without adequate transportation our integrated productive structure would, instead, be little more than a set of isolated cottage industries employing local labor and distributing their products within a geographically limited market; and without modern telecommunications, many of the social and economic interactions that we take for granted simply could not take place.



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It is the integrative functions of infrastructure that makes investment in these facilities and systems such a potentially powerful economic force. It is this integrative property that also makes effective planning of infrastructural investment so essential and inordinately complex. Infrastructural investments cannot be planned for in isolation. Major infrastructure systems have wide-ranging impacts whose effects are manifested over long periods of time. We, today, are the beneficiaries of infrastructural investments that were made decades ago; our investments, in turn, will profoundly affect the economic well being of future generations.



### **III. THE STATE'S INTEREST IN INFRASTRUCTURE DEVELOPMENT**

The nature and extent of the state's interest in infrastructure and development depends on the specific type of infrastructure being considered. Traditionally the construction and maintenance of major highway facilities has been considered to be an essential state function. The Massachusetts Highway Commission (now the Massachusetts Highway Department), the oldest state highway agency in the nation, was established well before the 1916 federal law requiring the existence of such agencies a pre-condition for the receipt of federal-aid highway monies. The state's interest in other public works such as regional transit systems, rail and airport facilities, although not always as direct and clear cut as with highways, is also well established.

State planning for investments in major transportation facilities – particularly a second Regional Airport and improvements to routes 2 and 7 -- were discussed at length in the course of the meeting. The discussion centered on three issues: integration of planning for complementary transport modes; the dynamics of local, regional, and state interests in transportation investments, including both "quality of life" and transportation access considerations; and the acquisition and application of highway revenues.

#### **A. A Second Regional Airport**

Planning for a second major airport in the state provided the focus for an extended discussion of many of the interrelated aspects of major transportation facilities planning. The need for a second regional airport is predicated upon current and anticipated congestion at Logan Airport. Initial estimates prepared by the Massachusetts Port Authority in 1990 forecast a capacity deficit of 5 million passengers per year by assuming an annual growth rate in demand of three percent; at a growth rate of four percent, the



deficit is expected to reach 19 million passengers per year. These growth rates are lower than the five percent annual growth rate that Logan has experienced over the past twenty years.

In a panel presentation, Betty Derosiers of the Massachusetts Aeronautics Commission discussed how these initial estimates of demand for air transportation are currently being reviewed in light of the New England Transportation Initiative and renewed regional interest in high speed ground transportation. The latter includes possibilities for much improved passenger rail service between New York City and Boston and ultra high speed magnetically levitated (Maglev) trains between Boston and other major cities in the Northeast. The potential impacts on demand at Logan of increasing use of telecommunications and economic and political developments in Eastern Europe and Pacific Rim countries are also being factored into this reassessment, as are the implications of new air quality requirements embodied in the Federal Clean Air Amendments of 1990 and the International Surface Transportation Efficiency Act of 1991.

Consideration has been given to accommodating anticipated increases in air transport demand through expansion of other New England Regional facilities such as Pease Air Base in New Hampshire and T.F. Greene Airport in Providence and linking these outlying facilities by high speed rail or Maglev ground transport to Boston. The integration of expanded regional air facilities by a high speed ground transport network is an attractive prospect. ----- noted that unfortunately, there are several serious problems with such an approach. In the first instance, 70 percent of the region's air traffic is centered in Massachusetts. The airlines that serve this traffic much prefer to concentrate their facilities at one or at most two, locations rather than maintain duplicate facilities and services at several sites. Furthermore, Pease could not accommodate the anticipated traffic growth even if expanded to the limits of its capacity, and even limited expansion of Greene would impose severe noise impacts on surrounding communities.



Regardless of its location, a second regional airport would impose severe growth pressures, high volumes of ground traffic, and a measure of noise pollution on neighboring communities. In anticipation of these inevitable impacts, the primary objective of the Second Airport Study has been to identify one or more sites of 5000 acres or more that could be reserved now to accommodate staged development to serve future air traffic demands from an initial level of 5 million passengers per year to an ultimate capacity of 30 million. (Logan presently handles 22 million passengers per year on a 2400 acre site.) The minimum size of 5000 acres for a new facility was chosen in the interest of limiting off-site noise impacts to the maximum extent feasible.

Two potential locations have tentatively been identified: Fort Devens, at which a total of 9000 acres could be made available at the Central and South posts; and a 5000 acre site at Winchendon and Gardner. Early identification of a specific site to be reserved for future development is essential if the surrounding communities are to have the opportunity to plan for the growth that will inevitably attend the creation of so large a facility. In this regard, a regional approach to growth management will be essential. It may be necessary, therefore, to reestablish the existing regional agencies into a form resembling the recently constituted Cape Cod Commission.

The Strategic Assessment study currently underway by the Massachusetts Aeronautics Commission will not only reexamine air traffic demand forecasts in the context of potential development of high speed ground transportation alternatives, but will also analyze the benefits and costs of reserving large tracts of land now for phased development in the future. Although public and private investment in a major regional airport will be considerable, anticipated economic activity spurred by this investment is expected to be substantial. In general terms, air access is essential for economic development. A recent Dow Jones survey revealed that good air service is the single most important consideration in the selection of a location for corporate headquarters. In more immediate and specific terms, a major airport is a powerful "economic engine." The



Aeronautics Commission estimates that, when operating at a level of 10 million passengers per year, a second regional airport would generate between one and two billion dollars in economic product a year and create between ten and twenty thousand new jobs; at a traffic level of 30 million passengers per year, the economic impacts would rise to as much as five billion dollars and 50,000 jobs. Logan, with 22 million passengers per year, currently employs 16,000 workers on site at an average annual wage of \$30,000 per employee.

#### **B. Major Highways**

As with major airport development, the state's role in planning, funding, and constructing major highway facilities, and the importance of such facilities for regional growth was acknowledged in the meeting. Two major projects served as the focus of discussion: upgrading Route 2 to four lane divided standards between Phillipston and Route I-91, and construction of a major north-south artery in the Berkshires between North Adams and the Massachusetts Turnpike. Both projects have been under consideration for many years. In both instances, local environmental and economic concerns have prevailed over regional and state interests, with the result that neither project has moved beyond the planning stage.

Impasses of the sort described above highlight the continuing need for a transportation planning process that, somehow, can overcome perceived differences in competing state, regional and local interests. But even with all parties working together, major highway and other transportation projects take as many as eight or more years to plan, design, and construct. If transportation investments are to contribute in a timely fashion to economic development goals, then ways must be found to expedite the state's procurement process, and accommodations to state and federal environmental regulations must be developed. It will also be necessary for the state to move expeditiously, in concert with local communities and regional agencies, to meet the various planning performance



requirements imposed by the Intermodal Surface Transportation Efficiency Act of 1991 as a condition of approval of federally aided transportation projects.

Given the long lead time involved in constructing new facilities on new rights of way, a prudent transportation investment strategy is seen as one which includes a mix of projects: new construction, particularly facilities that would provide good access between city and town centers and other major traffic generators and Interstate Highways; reconstructing or rehabilitating older facilities; and maintaining existing inventory in serviceable condition. Many participants felt that investments should focus primarily on strengthening existing centers, building upon infrastructure resources already in place.

Strong sentiment was expressed for funding such a balanced program through gasoline taxes and user fees dedicated to the exclusive use of highway investment, and for moving expeditiously to bring the outstanding \$400 million highway project authorizations to contract. All highway programs must compete directly with other programs under spending caps established by the state office of Administration and Finance. Separate authority for highways, backed by adequate gasoline taxes and user fees, would remove these restrictions, would allow highway investments to be seen as clearly distinct from government social programs, and would help ensure that expenditures on highways would more closely meet established needs. Furthermore, although the appropriateness of bonding to finance long-lived capital investments was acknowledged, participants were concerned about the high cost of debt service, the per capita cost of which is now higher than in any other state. Currently, 25% of the State's highway expenditures go for interest charges.



## IV. COORDINATION OF ECONOMIC DEVELOPMENT

There appeared to be a general consensus among participants that the State not only lacked a comprehensive plan for economic development, but also was ill-organized and ill-equipped to create such a plan. There was little interest in having the state develop the specifics of an economic development plan from the top down. Rather, some participants called for a general policy and strategy to be developed by the state in consultation with regional agencies, chambers of commerce, and other local and private sector interests. Once established, this policy would guide state actions for an extended period of time, independent of changes in Administration. In addition, some suggested that a geographic-specific plan could emerge from the integration of regional plans developed by regional agencies working with their own communities and private interests under the general policy guidance derived at the state level. For regional agencies to be effective in this role, they would need both political and financial support from the state.

Once developed, this articulated set of state policies and regional level plans could serve as a realistic, factual basis for the state to market its developmental potential. The process itself would provide evidence to prospective firms that we "had our act together," and would help to position us to secure a maximum of federal funds to support economic growth. An aggressive marketing program supported by a realistic budget and adequate staffing was seen by participants as a necessary ingredient in the process. The present promotional budget of \$400,000 was considered to be much too small; something more in the order of \$3 million was suggested.

A logical counterpart to an integrated set of economic development initiatives would be a related, comprehensive plan for transportation facilities and services. Such a plan would, ideally, be guided by proposed economic initiatives and would be fully multi-modeled in nature, considering not only potential trade-offs among logically competitive



modes (as is being done for air transport and high speed ground transport in the Strategic Assessment Study), but also the complementarity of modes and their physical integration (such as the integration of parking, bus and rail transportation at the Alewife terminal). The full realization of this comprehensive approach to transportation investment planning would be advanced by close collaboration among all agencies concerned with the provision of transportation facilities and services at state, regional, and local levels.



## V. A VIEW FROM THE OTHER SIDE

The preceding discussion has focused on the role of the state as a provider of infrastructure, mainly transportation facilities. But, as we have emphasized, the fundamental, sustained contribution that infrastructure investments make to economic development is through their capacity to facilitate the productive use of land. Consideration of development from the entrepreneur's point of view supports this assertion.

A panel presentation by firm location consultant Rick Graham of Fallon, Hines and O'Connor and a discussion group on ----, focused on this perspective. Participants identified two of the most important considerations in a firm's choice of location to be: 1) the availability of a public sewerage system, and 2) good transportation. Public sewerage has become especially important since the passage of Chapter 21E, which imposes considerable potential liability on firms that do not have access to wastewater disposal and treatment facilities. The meaning of "good" transportation depends on the specialized accessibility needs of a given firm. Commercial development for example, requires ready access to customers, often via public transportation as well as highways. Agglomeration of commercial enterprises is often sought as a means of creating a concentration of demand sufficient to support good public transportation service. Most new manufacturing is focused on research and development, for which ready access to major educational and academic research centers is considered to be essential. High speed, high capacity telecommunication data links are vital components of such access. This position is supported by responses to a 1991 survey of 340 major corporations which cite a state's support of infrastructure—including water and sewage treatment facilities, adequate transportation for people and goods, and modern communications technology—as among the most important considerations in a firm's locational decision.



## **VI. NON-STRUCTURAL INFRASTRUCTURE**

In addition to its role as a provider of physical infrastructure, the state can play an important coordinative role in facilitating what are essentially private sector transactions. The state's part in the consortium of interests that led to the successful conclusion of the Genzyme deal was often cited as an example of this facilitative capacity. The various activities of the Massachusetts Government Land Bank were also recognized as supportive of private initiative. Another function in which State/private-sector collaboration was encouraged was in providing information to firms seeking sites on which to locate. Not much favor was found with arrangements that placed the major burden for maintaining the requisite up-to-the-minute site information file on a State office. Rather, it was suggested that the state serve as the initial point of contact, referring applicants to the appropriate local chamber of commerce, regional agency, or public utility consortium for the specific information sought by the applicant. State support for the development of geographic information systems (GIS) was also called for. A GIS could combine information about available industrial sites with data on the transportation and other infrastructure available, local labor force and industry structure, environmental constraints and other considerations.



## VII. CONCLUSIONS AND RECOMMENDATIONS

The following conclusions and recommendations are drawn from the discussions that took place during the July 21st meeting. As such, they are intended to represent the wide variety of views that were expressed; they should not be seen as necessarily representing the position of a given individual or institution.

1. The effective use of scarce public resources requires comprehensive planning, detailed analysis based on sound, current data, and a coordinated investment strategy. The State lacks the ability to address its infrastructure needs in such a broad and coordinated way. It is, therefore, essential as a matter of highest priority that the State develop the capacity, in concert with its regional agencies, to plan infrastructure investments comprehensively across all modes within the context of a larger vision embracing a plan for economic development and land use. The establishment of such a capacity and its use in articulating a comprehensive approach to public investment undergirds each of the more specific recommendations that follow. This approach to transportation investment planning is not only fully compatible with the requirements of the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA); much of it is, indeed, required by this legislation.
2. Greater managerial and financial integration of state transportation agencies is consistent with, but not a necessary concomitant of, the comprehensive approach to transportation investment planning and economic development recommended above. The benefits to be sought through more centralized management of transportation revenues and expenditures must be weighted against the expectations of economic efficiency and perceived equity associated with the dedicated application of gasoline taxes and user fees to the source of those



revenues. Limitations imposed by federal legislation on the use of both federal and state highway and airport user taxes must also be considered. It is unlikely that these opposing views will be easily reconciled. Nevertheless, a thorough study of the ways in which transportation revenues are generated, invested, and distributed among modes and regions in the Commonwealth should be undertaken as a part of the comprehensive planning initiative called for in Recommendation 1.

3. The network of transportation facilities needed to support an active, growing economy throughout the Commonwealth is incomplete and inadequate. Ongoing studies directed toward rectifying these deficiencies--principally, identification of major state highways as links in the federally-mandated National Highway System; the multimodal New England Transportation Initiative; the Strategic Assessment/Second Regional Airport Study; and an assessment of telecommunications links--should be coordinated and vigorously pursued in the interest of developing a well-articulated system of mutually supportive modal facilities tied to the larger New England regional complex of which they are a part.
4. The port of Boston will not fulfill its potential as a center of national and international trade until it is more fully competitive with other ports along the Eastern seaboard. The comprehensive study called for in Recommendation 1 should include a realistic assessment of the latent demand for use of Boston as a port of entry and exit and a detailed analysis of the appropriate mix of public and private investments needed to reduce costs and improve access through the port and beyond to the point where this demand can be realized.
5. Although the eventual completion of the Central Artery and Third Harbor Tunnel Projects will materially facilitate highway movements within and through Boston, major deficiencies will persist in other parts of the State. Debates over upgrading Route 7 between the Massachusetts Turnpike and North Adams and Route 2



between Phillipston and Route I-91 must consider these improvements' impact on the economic well-being of the western and north central regions of the Commonwealth. Selected improvements between town centers and major industrial and commercial traffic generators and the Interstate highway system are also important in many areas.

6. Construction of major improvements in the State highway system has, in critical instances (such as Route 2 and 7), been thwarted by local concerns regarding the impacts that such construction would have on community and environmental values. Although it is essential that the State continue to take the lead in coordinating the planning and construction of state highway facilities, regional agencies should be encouraged and adequately funded to work actively with affected communities in seeking compromise locations and designs that satisfy regional and inter-regional transportation needs safely and expeditiously while reflecting due regard for local concerns. Full advantage should be taken of recently adopted federal procedures that give the State wider latitude in applying geometric design standards that are compatible with local settings.
7. Transportation investment should not be thought of solely in terms of the construction of new facilities on new rights-of-way. A balanced approach should be adopted that includes maintenance of existing facilities, conversion of existing assets, especially rail rights-of-way, to a mix of freight and passenger service, and disinvestment through the conversion of superfluous facilities to alternative public or private use. Focusing on obtaining the fullest use of existing infrastructure will maximize the economic impact of limited public expenditures.
8. The de novo construction of a second regional airport in central Massachusetts would involve unprecedented impacts on the community or communities in which this facility would be located and on neighboring towns, as well. A thorough study



of alternative ways of accommodating anticipated air transport demand--such as the Strategic Assessment currently being conducted by the Massachusetts Aeronautics Commission--should be completed prior to embarking on so massive and problematic an enterprise. This study should include a detailed, realistic, analysis of the relative costs and benefits of various combination of actions including economic incentives to both freight carriers and general aviation to relocate operations away from Logan, and high speed ground transport, including Maglev technologies, for the movement of passengers and high value freight over short and intermediate distances.

9. Recommendations 1 through 8, above, deal explicitly with public infrastructure investment strategies that should be considered by the State in the interest of promoting the Commonwealth's economic growth. Such a comprehensive infrastructure investment plan would, in itself, be seen by firms as practical evidence of the State's understanding of businesses' need for a sound public infrastructural base upon which to build private investment. The improvements that would result from the implementation of the plan would provide further direct support to specific firms seeking to locate in a given area. In addition to facilitating the movement of people and goods through improvements to the State's transportation infrastructure, public investment in and support of other forms of infrastructure would significantly enhance the State's ability to attract and retain commercial and industrial activity. Examples include:
  - Developing, in collaboration with the Regional Planning Agencies, a Geographic Information System that would provide both private interests and public agencies with a comprehensive, geographic specific data base including land use, economic and demographic data, public improvements and natural features.



- Establishing a highly visible point of contact through which firms seeking site information could be referred to the appropriate local or regional agency or public utility for current information regarding available sites and associated community characteristics.
- Aiding communities or groups of adjacent communities to develop wastewater transport and treatment facilities consistent with state and federal laws governing the disposal of commercial and industrial liquid waste.
- In concert with universities and private industry, develop a supercomputing facility and a supporting statewide network of high speed, high capacity data links providing access to universities, research facilities, data intensive industries, and public agencies.
- The State should proceed expeditiously to move the entirety of the \$400 million in highway project funding from the authorization stage to the contract stage. Full and prompt implementation of this highway program would serve not only to move badly needed funds into the economy, but would also provide an important signal to the business community that the Massachusetts economy is moving again.



## **APPENDICES**



## **AGENDA**

### **Investing in Economic Infrastructure**

Tuesday, July 21, 1992

University of Massachusetts at Boston

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- 9:00 a.m.              Coffee and Registration
- 9:30 a.m.              Welcome and Statement of the Task for the Meeting  
Dr. J. Lynn Griesemer, University of Massachusetts, Donahue Institute  
Richard Henderson, Executive Office of Economic Affairs
- 9:45 a.m.              Panel Discussion: In deciding for locations for a new manufacturing plant and separately a new office facility, on what infrastructure factors would you place the highest priority? Would additional or different factors be important in a decision made ten years from now?  
Panelists:              Richard Graham, Partner, Fallon, Hines, O'Connor  
                            Betty Derosiers, Project Manager, Massachusetts Aeronautics Commission  
                            Karl Seidman, Deputy Director, Massachusetts Government Land Bank
- 11:15 a.m.              Break
- 11:30 a.m.              Charge to the Small Working Groups
- 11:45 a.m.              Working Groups. Each group will be asked to answer the following questions:  
(1) What are the needs of the Commonwealth in the identified area? (2) How can these needs be financed? (3) What is the proper state role in this area?  
The groups will be divided into the following three areas:  
Group 1:              Transportation  
Group 2:              Land Use and Buildings  
Group 3:              Communications and Utilities  
Lunch will be made available in working groups.
- 1:30 p.m.              Presentation and discussion of findings.
- 2:30 p.m.              Development of preliminary recommendations.
- 3:30 p.m.              Conclusion

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